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THE SURGERY OF PREGNANCY AND LABOUR COMPLICATED WITH TUMOURS.

Reprinted from the LANCET, 1901, *Vol. I.*

BY

J. BLAND-SUTTON, F.R.C.S.ENG.,

SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN; ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL.

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PREFACE.

These lectures illustrate, in a measure, some of the great advantages which women obtain from the aggressions of Aseptic Surgery into Obstetric Territory, when pregnancy, parturiency, and puerpery are complicated with tumours in the pelvis.

In 1870, Spencer Wells fluttered the practitioners of midwifery by relating successful cases of unilateral ovariotomy during pregnancy, and pointed out its justifiability. In 1877 he proved it. Ten years later the fact that bilateral ovariotomy could be performed when the uterus was gravid without harmful effect on mother or child caused further astonishment; and in 1891 I was able to give references to six successful operations in these circumstances. In 1901 we realise with equanimity that subserous fibroids, even of large size, can be enucleated from the walls of a gravid uterus without interfering with pregnancy, the mother going safely through her confinement at term, and becoming possessed of a healthy, vigorous offspring.

J. BLAND-SUTTON.

48, Queen Anne Street,
July, 1901.

LECTURE I.

Pregnancy, Parturiency, and Puerpery, complicated with Ovarian Tumours.

Anything which jeopardises the life of a woman when she is advanced in pregnancy, but more especially when she is enduring the "pain of childbirth," always excites our deepest interest and sympathy, quite apart from the fact that two lives are involved. This being so, I shall begin this lecture by briefly stating the details of two cases which will well illustrate the grave dangers which beset the life of a mother and of the child when, after being some hours in unavailing travail, it is discovered that her pelvis is occupied by a tumour.

Case 1.—On October 3rd, 1900, a woman, aged 28 years, had been in labour with her first child for about 20 hours. She was then seen by Dr. A. B. Calder, who found delivery obstructed by a large, tense, semi-fluid mass occupying the outlet of the pelvis. He at once recognised the gravity of the case, and had the patient conveyed to the Chelsea Hospital for Women in a cab. I happened to be at the hospital when she arrived, and quickly satisfied myself that the hollow of the sacrum was filled with a large, tense, cystic mass, which completely occupied the true pelvis. We at once arranged for speedy relief. The abdomen was carefully washed and made as antiseptic as possible in the circumstances, and the patient was etherised; the uterus was exposed by a free incision in the linea alba, and an attempt was made to extract the tumour. The head of the fœtus was so thoroughly impacted in the pelvis, that I could not even insinuate a finger between the

uterus and the pelvic brim; under these conditions I incised the uterus, and extracted the fœtus with its placenta and membranes; this enabled me to reach the cyst, and to withdraw it from the pelvis. As is always the case in such circumstances, it had a long and slender pedicle, which I ligatured with thin silk in the usual manner. The incision in the uterus was closed with two layers of silk sutures, one set including the mucous and part of the muscular wall, the second including the serous layer and subjacent portion of the muscular wall of the uterus. The incision in the linea alba I closed in three layers. The vagina was thoroughly irrigated, and the patient, who had lost very little blood, returned to bed in excellent condition. The infant, a vigorous boy, "wauled and cried" as usual on his advent into the atmosphere, and on the second day he took the breast in the ordinary way and throve as usual. The mother convalesced with as little difficulty as after normal labour. I considered it desirable to keep her resting in bed for three weeks to allow the uterine, as well as the abdominal, incision to heal soundly. The tumour was a dermoid with a single cavity filled with the usual pultaceous matter, mixed with shed hair and containing one piece of bone. It was somewhat ovoid in shape, its axes measuring ten centimetres by eight centimetres. The consistence of the contents of the dermoid was about equal to that of soft soap, so that under the pressure of the strong uterine contractions it had become very accurately moulded to the cavity of the true pelvis.

Case 2.—On July 29th, 1896, a friend of mine, a practitioner with extensive experience in midwifery, asked my advice in regard to a woman, aged 33 years, the mother of two children, in travail with her third child, but delivery was obstructed by a pelvic tumour. I advised him to send the patient into the hospital without delay so that ovariotomy could be carried out. Instead of this he obtained the assistance of another practitioner, and they succeeded in pushing up the tumour and extracting the

child with forceps. On August 2nd—that is, the third morning after delivery—the patient had severe pain in the abdomen, accompanied by vomiting, an accelerated pulse, and high temperature. This naturally caused alarm; my friend came to me and described the treatment that had been adopted and which I have just described. The patient was admitted into the hospital in an extremely critical condition; the abdomen was greatly distended and tender, the pulse rate was 150 to the minute, the temperature was 100° F., and the patient looked extremely ill and vomited frequently. I gently examined the abdomen, but could not distinguish a tumour, and I came to the conclusion that it had in all probability been burst when it was pushed out of the pelvis. This conjecture, however, proved to be erroneous. The patient's condition, though clearly desperate, was not entirely hopeless, and it seemed cowardly to abandon the poor woman to her fate, so I performed cœliotomy. On incising the abdominal wall a large quantity of muco-purulent fluid escaped, and the intestines were villous with patches of inflammatory lymph. An ovarian tumour of the dimensions of a fœtal head was detected and removed; its pedicle was twisted through one complete revolution. No signs of injury were observable on the uterus or in the pelvis. The exudation was carefully removed, and the wound was secured in the usual way. The operation failed to improve matters, and the patient died 18 hours later. A very thorough *post-mortem* examination failed to throw any light on the cause of the peritonitis. The tumour was a semi-solid ovarian adenoma.*

These two cases deserve careful consideration, for whilst the issue in each instance is in striking contrast, the method which I adopted in the successful case is by many regarded as distinctly unorthodox, inasmuch as it is contrary to authority and tradition; whilst the ancient method adopted in Case 2, which resulted in the death of the child, and subsequently involved the life of the mother,

* 'Middlesex Hospital Reports,' 1896,

has the sanction of some practitioners who make midwifery the principal work of their lives.

The subject is specially interesting to me because when preparing the second edition of my book on "Surgical Diseases of the Ovaries and Fallopian Tubes," I accumulated a quantity of records from a variety of sources and analysed them in regard to this particular point; and although I was able to work out certain principles for my own guidance, it is quite clear from a study of some of the "remarks" made on the subject that the Fellows of the Obstetrical Society of London are very uncertain which is the best way of dealing with this serious difficulty.

Let me first show you how uncontrolled nature acts in such an emergency as is set forth in these two cases—that is, when an ovarian tumour occupies the pelvis and offers mechanical impediment to delivery. In such circumstances the fœtus almost invariably dies, and the following accidents may happen: (1) rupture of the cyst; (2) rupture of the uterus; (3) rupture of the vagina; and (4) extrusion of the tumour into the rectum. This is a formidable list of dangers, and, extraordinary to relate, with the exception of rupture of the uterus, women have recovered even under such awful conditions. It will serve my purpose very well briefly to refer to some of the more important of them, as it will enable me to indicate in precise terms the disadvantages of some of the methods of treatment which are still advocated.

Rupture of the uterus.—This, I believe, is a somewhat exceptional accident under these conditions, but the best known case was recorded by Ogier Ward* in which a cyst of the right ovary as large as a cocoanut prevented the head of the fœtus from entering the true pelvis. The uterus ruptured, and the woman died.

Rupture of the vagina.—This is an unusual accident when it occurs as a result of the efforts of the uterus alone. One of the best-known examples is that recorded by Kers-

* 'Transactions of the Pathological Society of London,' 1853, vol. v, p. 219.

will. A woman in labour was found to have an obstruction in the pelvis. In the course of the delivery an ovarian cyst of the size of a cocoanut was detached and forced through a rent in the vagina. Five centimetres of the pedicle remained on the tumour. The patient recovered.*

Extrusion of the tumour into the rectum.—One case has been observed and recorded in which an ovarian dermoid obstructing labour has been pressed into the rectum and the wall of the bowel has become invaginated, and the tumour, invested by the bowel, has been extruded through the anus. In these circumstances the practitioner has incised the mucous membrane, and seized the tumour and detached it after ligaturing the pedicle. The patient recovered (Alexsenko).

Rupture of the cyst.—This is, I believe, the common way in which nature overcomes the difficulty, and if the cyst be thin-walled, and the fluid sterile so far as micro-organisms are concerned, the results are not necessarily harmful; but when the tumour has thick walls and contains dermoid material, the effects are often very grave.

Brewer recorded a case in which an ovarian cyst obstructed delivery. The cyst burst, and its contents escaped through a rent in the vagina; the woman recovered.† This observation is of some interest because some accoucheurs recommend in cases where a cyst obstructs the transit of the child that it should be emptied through a vaginal puncture. It is certain that some patients have survived this unsurgical procedure and that some have died after it. On one occasion a practitioner not only punctured a cyst, but stitched the edges of the puncture to the vaginal wall (Fritsch). Attempts to clear an obstruction of this kind by the vaginal route could easily be pushed a step further if the practitioner had a little operative experience, and the whole cyst could be removed through an incision in the vagina (Dakin).

As delivery by nature's own efforts when a firm ovarian

* 'Brit. Med. Journ.,' 1880, vol. ii, p. 83.

† 'Transactions of the Obstetrical Society of London,' vol. xx, p. 184.

cyst or solid tumour blocks the pelvic outlet can scarcely be described as successful, it will be useful to consider the various expedients adopted by accoucheurs to meet these difficulties and the results which have accrued therefrom.

A remarkable case is that reported by Berry. A woman taken in labour with her tenth child was found to have her pelvis obstructed by a tumour. The child was delivered by forceps. The same evening the patient felt something escape from the vagina during a fit of coughing. This Dr. Berry recognised as an ovarian cyst extruded through a rent in the vagina. He ligatured the pedicle and removed the tumour. The woman recovered. This cyst is preserved in the museum of St. Bartholomew's Hospital.*

In 1898 a ruptured ovarian dermoid was exhibited at the Obstetrical Society of London which had obstructed labour in a woman, 27 years of age, the mother of one child four years old. Attempts made to deliver with forceps failed; the dead child was then extracted by turning. Next day signs of peritonitis appeared, and the patient died on the third day. At the *post-mortem* examination the burst dermoid was found.†

In a case full of interest, recorded by Griffith, delivery was obstructed by a large solid tumour of the ovary. He performed craniotomy, but then the fœtus could not come through; he then turned the child, and even in this way its transit was difficult. The mother died.‡ This is a rare complication, and it gave rise to an erroneous diagnosis. Griffith regarded the mass to be an extra-uterine fœtus. The pelvis, in section, is preserved in the museum of the Royal College of Surgeons of England, and is represented in Fig. 1.

When a small dermoid obstructs delivery it may be possible to effect delivery by turning; but I think the subjoined case is not a recommendation for this manœuvre.

* 'Transactions of the Obstetrical Society of London,' vol. vii, p. 263.

† Ibid., vol. xl, p. 331.

‡ Ibid., vol. xxxiii, p. 140.

Case 3.—A young married woman under my care in 1892 made the statement that she had been twice delivered of stillborn children after exceedingly difficult labours. The fœtuses in each case were extracted by turning, and her life was despaired of after each confinement. On the

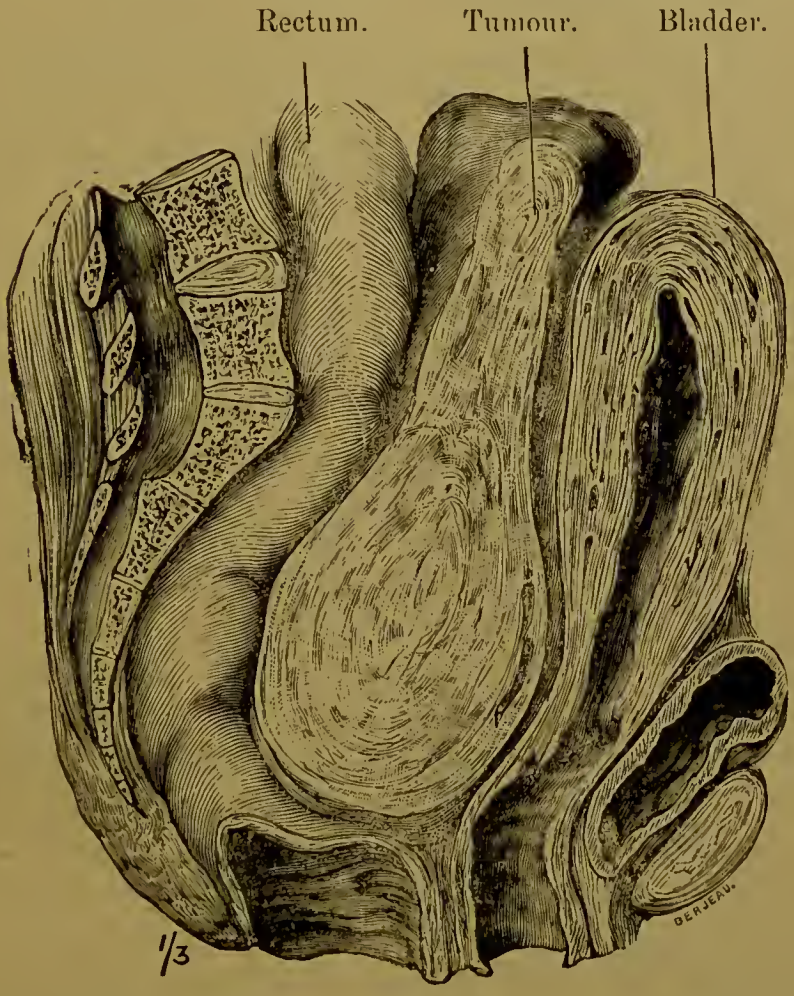

Fig. 1.—Sagittal section of a pelvis in which delivery was obstructed by a solid tumour of the ovary. (Museum of the Royal College of Surgeons of England.)

second occasion the practitioner detected a tumour in the pelvis. I removed this in the Middlesex Hospital; it was an ovarian dermoid, with an average diameter of five centimetres firmly fixed to the pelvic floor by dense adhesions. The patient recovered and re-conceived, and had a living child two years after the operation.*

* 'Medical Press and Circular,' 1892, vol. ii, p. 94.

The methods of dealing with labour when obstructed by a pelvic tumour which we have just considered may, for convenience of reference, be described as craniotomy, forceps, and version, and they have only been mentioned and illustrated by typical cases in order that they may be thoroughly condemned.

To-day the choice of treatment really lies between two methods: 1. In the early stage to push the tumour out of the pelvis, and allow labour to be completed, and then at some convenient season to perform ovariotomy. This is often referred to as "reposition." 2. To perform ovariotomy at once, and then to accelerate the labour by the use of forceps. If the tumour cannot be extracted, then perform Cæsarean section. This method may be conveniently referred to as ovariotomy which may occasionally require Cæsarean section. The two cases which I detailed in opening this lecture illustrated very well some of the chief points of the two rival methods, but it is necessary to enter somewhat into detail concerning reposition because it is advocated by some obstetricians whose experience entitles their opinions to careful consideration. They advocate reposition whenever it is practicable, on the ground that it allows labour to be completed; and although the necessity for ovariotomy is not avoided, nevertheless it does allow such an operation to be carried out in a more convenient manner, and under conditions which not only safeguard it from sepsis, but permit it to be performed by an individual skilled in this class of work.

To these views it may be urged that the surroundings of a woman in labour ought to be such that she runs no risk from sepsis. At the present time no surgeon would think of performing even a trivial operation without antiseptic precautions of some formula or other, and exactly the same precautions should be made for nature's interesting and important operation of childbirth. Further, in all large towns experienced operators are available, and, in the case of the poor, well-equipped hospitals are always ready to receive urgent cases of this kind, as well as acci-

dents, into the wards; and it is undeniable that an ovariotomy performed by an operator skilled in pelvic surgery is attended with far less risk to life and health than a normal labour in septic surroundings.

There are two very grave dangers which attend reposition—namely, rupture of the cyst and acute twisting of the pedicle; each of these are conditions which, when they occur in non-pregnant women, are held as justification for immediate ovariotomy. It is easy to collect half a score of cases in which reposition has been successful, but the unsuccessful cases are not recorded, and thus we are deprived of any means of comparison. Be this as it may, I am quite certain from the remarks made at the Obstetrical Society of London in 1897, on the occasion when Dr. R. G. McKerron's painstaking paper on "The Obstruction of Labour by Ovarian Tumours in the Pelvis" was read, that the majority of practitioners will, when face to face with a difficulty of this character, make a determined effort to push the tumour out of the pelvis. This is, however, decidedly in opposition to all the canons of surgery, as I will now endeavour to show. It may perhaps be useful to indicate the position in a decided way, and to state that *pregnancy exerts a baneful influence on ovarian tumours; and ovarian tumours are, as a rule, inimical to successful pregnancy.*

As a matter of fact, tumours of the uterus, as well as those arising in the ovaries, are very liable to induce abortion, and it is difficult to state which are the more pernicious in this respect; but I will take the opportunity of relating the details of a case which will well illustrate the malign influence of even a small ovarian tumour in pregnancy.

Case 4.—A woman, 26 years of age, was placed under my care in the Middlesex Hospital in 1900 on account of a small ovarian tumour. The patient had been married 18 months, and in this short time had miscarried on three occasions, and was pregnant for the fourth time. After

the third abortion a small moveable tumour was detected at the back of the uterus, and when her medical attendant realised that she had again become gravid, he urged her to submit to operation. I performed ovariotomy, and removed the right ovary, which was converted into a cyst as big as a fist; and the pregnancy, which had then advanced to the end of the second month, was not disturbed, and she has subsequently been delivered of a healthy living child at full term.

In studying the literature of ovarian tumours complicating pregnancy, and especially tumours incarcerated by the gravid uterus, one of the most prominent facts is the frequency with which the tumours are dermoids; in many instances also the dermoids are bilateral, and this is a fact to bear in mind. For example, Berry Hart performed ovariotomy on a woman in the beginning of the fifth month of pregnancy, and removed a dermoid of the left ovary, "enlarged to about the size of a man's brain by recent hæmorrhage resulting from a twisted pedicle. The patient made good progress for a week, but on the ninth day died of cardiac failure." A frozen section was made of the pelvis, and on inspecting the cut surface the right ovary was seen to be incarcerated in the recess of the sacrum (Fig. 2). Bilateral ovarian dermoids co-existing with, or detected soon after, delivery have been observed and recorded by Knowsley Thornton, Bantock, F. Page, Cullingworth, and others, including myself, which have demonstrated that a woman may have one or both ovaries transformed into dermoids, and yet they are capable of yielding fertilisable ova.

In relation to this matter the following observation is of interest. A woman, 28 years of age, mother of one child, believed herself to be five months advanced in pregnancy, when she was suddenly seized with severe pelvic pain, accompanied by bleeding. She consulted Mr. McDowell, who thought a miscarriage was imminent: and as the size of the swelling in the hypogastrium did not

correspond with that of a normal pregnancy at the fifth month, he thought the fœtus was dead. I saw the patient with him, and took the same view of the patient's condi-

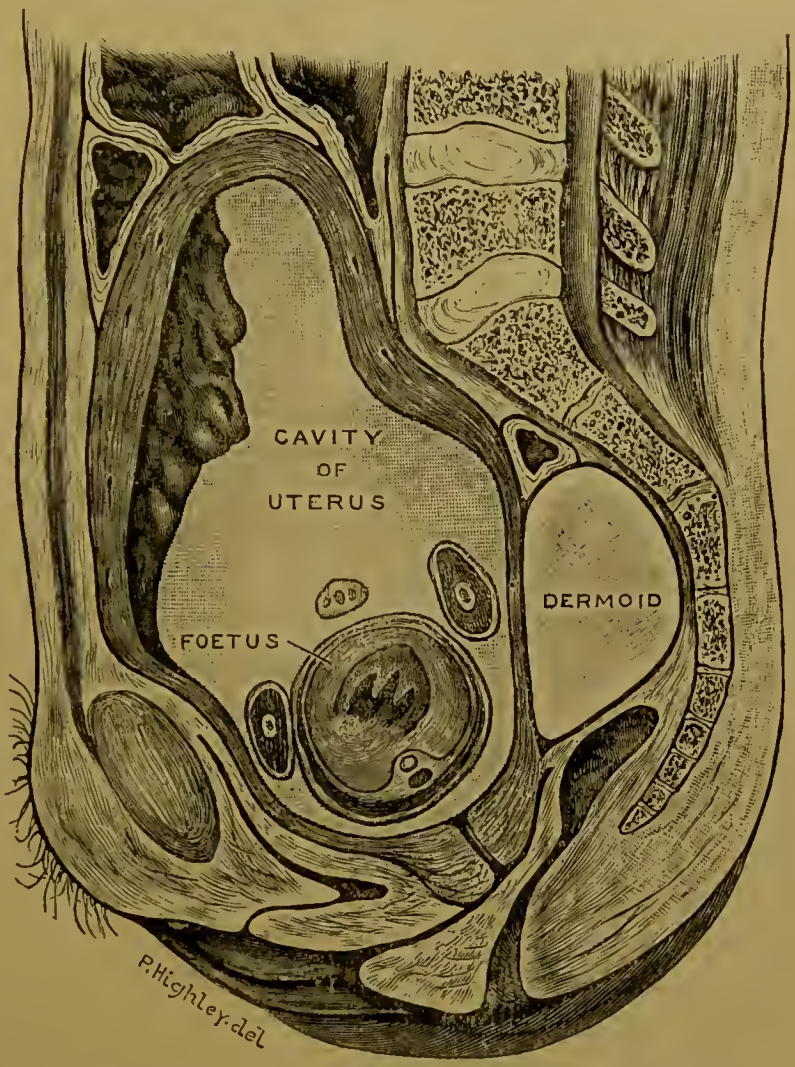

FIG. 2.—Frozen sagittal section of a pelvis at the beginning of the fifth month of pregnancy. A dermoid of the right ovary is incarcerated in the hollow of the sacrum by the gravid uterus. From 'Clarence Webster's Researches on the Anatomy of the Female Pelvis.')

tion. Three months later there was no alteration in the size of the pelvic mass, but a second swelling could be made out, and this led to a reconsideration of the diagnosis. It was now clear that the large soft swelling in the hypogastrium was a tumour. Cœliotomy was recommended: at the operation I found the left ovary converted

into a large, soft, tooth-bearing dermoid, which had twisted its pedicle through two complete revolutions, and lay between the uterus and bladder. The uterus was about six weeks gravid, and the right ovary contained a large *corpus luteum*. The dermoid was removed, and the patient recovered without any disturbance of her pregnancy. *This patient had conceived subsequent to the axial rotation of a large ovarian dermoid, and whilst the tumour, with its twisted pedicle, encumbered the pelvis.*

It may not be amiss if I briefly draw your attention to the steps by which the surgical treatment of ovarian tumours complicating pregnancy has been evolved. Although ovariotomy during pregnancy had been successfully performed in 1847 by Burd of Shrewsbury, by W. L. Atlee in 1850, and by Marion Sims, the procedure did not meet with favour until Spencer Wells forced it on the profession in 1877. This surgeon had pointed out its justifiability in 1870; but seven years later he strengthened his argument by reporting nine cases of ovariotomy during pregnancy with one death. The discussion which followed the reading of his paper at the Obstetrical Society of London is well worth perusal, as indicating the opinions regarding this grave complication and its treatment, held by the leading obstetricians of that period. A very large number of cases have since been recorded which show that it is now the recognised method of treatment in the early stages of pregnancy.

It would be suspected that the risks of ovariotomy during pregnancy would be those of an ordinary ovariotomy, *plus* the chance of abortion with its ordinary dangers; but an analysis of a large number of cases demonstrates that when ovariotomy is performed before the fourth month of pregnancy the chances of abortion are very small, whereas the average mortality is less than in ovariotomy performed on non-gravid women. The risks of even double ovariotomy during pregnancy, when the operation is undertaken before the fourth month, are very small, and the chances of disturbing the pregnancy are

few. A critical study of a large number of records led me to formulate the results in this way: Before the fourth month of pregnancy single and double ovariotomy is attended with an exceedingly low rate of mortality, and the risk of disturbing the pregnancy is small. The removal of a parovarian cyst during pregnancy is more liable to disturb the uterus than simple or double ovariotomy. After the fourth month the risk is that of an ordinary ovariotomy, but the chance of abortion increases with each month.

Now that we realise the importance of removing ovarian tumours whenever they are detected, quite a large number of records have been published in which ovariotomy has been successfully performed in the later stages of pregnancy, and in three instances it has been carried out successfully at the end of the ninth month of pregnancy by Pippingsköld,* by myself,† and by Morse.‡ In Morse's, as in my patient, the tumour was a dermoid incarcerated in the pelvis by the pregnant uterus. In my case the tumour was detected during the birth of the patient's child, which was stillborn in consequence of the obstruction which it offered to delivery, and no active steps were taken to have the tumour removed until the woman was again well advanced in pregnancy (seven and a half months). This being the condition I thought it judicious to keep her under observation in the hospital until near term, so that in the event of the operation precipitating labour the child would be thoroughly viable. Five years after the operation the mother and child presented themselves in excellent health.

It has now been clearly demonstrated that ovariotomy has been performed with very marked success in each of the nine months of pregnancy, and it has now in a fair number of instances been carried out whilst the patient

* 'American Journal of Obstetrics,' vol. xiii, p. 308.

† 'Brit. Med. Journ.,' 1895, vol. i, p. 461.

‡ 'Transactions of the Obstetrical Society of London,' vol. xxxviii, p. 221.

was in labour. In this extreme condition the necessity for ovariotomy may be formulated thus: When an ovarian tumour is discovered during labour, and it impedes delivery, ovariotomy should be performed. If the tumour offer no obstacle to the passage of the fœtus, it should not be interfered with until after the puerperium, unless unfavourable symptoms arise.

It may be urged in reply to the above aphorism that it is not always easy to carry out the operation, and in the case with which this lecture opens it was impossible to extract the tumour from the pelvis until after the uterus had been emptied by Cæsarean section. Other operators have had the same difficulty (see table). I have thought it desirable to add a list of recorded cases in which ovariotomy has been performed upon women actually in labour. The cases have been drawn from purely British sources. For this I hope not to be accused of what is sometimes facetiously called "insularity." I am convinced that the enormous population of this island should furnish material enough to settle the principles of treatment which should govern these terrible cases of obstructed labour.

Ovariotomy for Tumours obstructing Labour at Term.

Operator.	Nature of tumour.	Result.	Reference.
Williams . .	Cyst	Recovery	Trans. Obstet. Soc. Lond., vol. xxvi, p. 203.
Spencer . .	Dermoid	Recovery	Ibid., vol. xl, p. 14.
Boxall* . .	Dermoid	Recovery	Ibid., vol. xl, p. 25.
Bland-Sutton*	Dermoid	Recovery	This lecture, Case 1.
Sinclair* . .	Cyst	Recovery	Lancet, 1901, vol. i, p. 158.
Favell* . .	Dermoid	Recovery	Brit. Med. Journ., 1901, vol. i, 894.
~~Munro-Kerr~~ .	~~Dermoid~~	~~Recovery~~	~~Ibid., 1901, vol. i, p. 1145.~~

* In these cases Cæsarean section was necessary in order to extract the cyst from the pelvis.

It is not stating the case too positively to assert that "when an ovarian tumour complicates pregnancy, the life of the woman is imperilled throughout the whole of the term; the peril increases with each succeeding month of gestation, and culminates in a climax with labour (or abortion)." During delivery, however, mischief may be produced which is only appreciable during the puerperium.

Throughout this lecture we have almost exclusively considered those cases where an ovarian tumour is incarcerated in the pelvis, and obstructs (as a rule completely) the transit of the child. We have now to deal with a much more insidious, and a far more fatal, complication—namely, where an ovarian tumour complicates labour, and delivery is completed without in some cases its presence being even suspected. The two great dangers at this period are (1) rupture of the cyst, and (2) axial rotation.

It is natural to infer that when an ovarian cyst with thin walls be subjected to pressure from a uterus during labour it would burst, and it by no means follows that the accident is necessarily lethal, for cases have been accurately observed in which the cyst has burst, and the fluid absorbed by the peritoneum has been excreted by the kidneys. All operators of experience in abdominal surgery have found collapsed ovarian cysts in the abdomen and the intestines inundated with the viscid colloid stuff, and after removal of the tumour the patients have recovered. It is also true that even the distribution of the greasy material characteristic of dermoids among the pelvic viscera and adjacent sections of the intestine is not always attended with fatal consequences; an ovarian cyst may be ruptured during delivery, and may cause such disturbance that the patient's life is jeopardised, or in many instances destroyed. In other cases the collapsed cyst may slowly refill, and may require to be removed many months afterwards.

When pregnancy and labour are complicated with ovarian tumours, the latter are very liable to undergo axial rotation, and to twist their pedicles. It is quite true that almost every viscus in the abdomen is liable to axial

rotation, yet all writers on the subject agree that this accident most commonly arises with ovarian tumours associated with a pregnant uterus. I have studied the question very closely and carefully. The torsion may occur early in the pregnancy, or it may be delayed till delivery. The occurrence of acute torsion at the time of delivery (or abortion) is due to the rapid diminution of the uterus, and the movement which this organ, as it sinks into the pelvis, imparts to the tumour. A case of very great interest in relation to this question was reported by Edwards.* A woman, 24 years of age, had for at least two years a tumour on the right side, which did not attract much attention until she became pregnant in 1860. In October of that year she was delivered of a child who only survived a few days. Immediately after the birth of the child the tumour shifted over to the middle of the abdomen. On August 5th, 1861, this woman was delivered of another child at the seventh month; the infant lived a few hours. After the child was born the tumour was found in the middle line of the abdomen. The patient died three days later. At the *post-mortem* examination the pedicle of the cyst was found twisted one and a half turns; it contained four litres of blood-stained fluid. The ovary was on the surface of the cyst, which was therefore parovarian in origin. I have often referred to this case, for it illustrates very well the fact that the majority of ovarian cysts, when they rotate axially, turn to the middle line, and instead of occupying a lateral position lie in the hypogastrium. I have on nine occasions performed ovariotomy when the tumour has been noticed a few days after labour. The patients state that they notice that the abdomen does not return to its proper size, and in some instances that it seems to enlarge again. This enlargement in some of the cases was due to bleeding into the cyst. A marked feature in all the cases, and one which led to some doubt in the diagnosis, was the way in which the tumour occupied the middle line of the abdomen and simulated an enlarged

* 'Lancet,' Oct. 5th, 1861, p. 336.

uterus, and in all the cases axial rotation had occurred. In some of them the skin of the abdomen exhibited the peculiar yellow pigmentation so often associated with pregnancy, but which very rapidly disappeared after the removal of the tumour. The axial rotation of an ovarian cyst not only menaces the life of the patient immediately on its occurrence, but the longer it is allowed to persist it increases the difficulty, and therefore the risk, of ovariotomy by establishing extensive adhesions between the tumour and the adjacent viscera, especially the intestines.

Another danger which threatens a puerperal woman when she has an ovarian cyst is the liability of the cyst to suppurate. A critical study of a large collection of histories of patients who have had their "labour" complicated with ovarian cysts shows that in the majority of instances the cysts have twisted pedicles, and that in a fair proportion of cases suppuration has occurred in the cyst. In many of the cases a ruptured cyst has been found. Aust Lawrence* has operated upon ten cases of this kind, and in each instance with success. In some the pedicle was twisted, in others the cyst had burst, and in one case bilateral ovariotomy was necessary.

It is now a well-attested fact that ovariotomy can be successfully performed even while labour is in progress—that the operation in no way interferes with the contraction of the uterus. Single and even double ovariotomy can be successfully performed in the puerperium without in any way interfering with either the involution of the uterus or lactation. Therefore it cannot be too strongly urged that, *when a puerperal woman known to possess an ovarian tumour exhibits unfavourable symptoms, ovariotomy should be resorted to without delay.*

* 'Brit. Med. Journal,' 1893, vol. ii, p. 622.

LECTURE II.

When Pregnancy and Fibroids co-exist.

My object in this lecture is to set forth the perils which beset a woman when, with her uterus occupied by fibroids, she is so unfortunate as to conceive. This is a matter which has not received adequate consideration from the standpoint of modern surgery; and although many cases of this unlucky combination have been recorded, no serious attempt has been made to deal with it in a comprehensive manner, and in the light of the recent extraordinary advances in the surgery of the uterus. It will be useful to indicate the danger attending pregnancy, travail, and the puerperium, complicated with uterine fibroids by some actual records.

Case 1.—In 1897 I saw in consultation a woman, 40 years of age, who had been married 14 years. Ten days before I saw her the patient had been delivered of a child at term. Coincidently with the expulsion of the placenta an oval body, in shape like a fœtal head, presented at the mouth of the womb; this was at first regarded as the head of a twin, and efforts were made to draw it forth; but careful examination revealed some nodular outgrowths on the uterus, and no further attempts were made to extract this mass. When I saw the patient there was no difficulty as to the nature of the condition, because a large submucous and septic fibroid protruded from the uterus into the vagina. The woman died three days later, being

the thirteenth day after delivery. No operation could be entertained, the patient being too ill.

The practitioners in this instance were not the first to be puzzled by a large submucous fibroid in process of extrusion in a parturient woman. Yeld recorded a case* in which a woman, the mother of nine children, was delivered of a hydrocephalic child which had been dead for three days. A sessile tumour mistaken for the placenta was removed with the help of a blunt hook and three medical men. The woman died from shock two hours later. The tumour was nine inches in circumference, and weighed four and a half pounds. Yeld ends his account of this dreadful case with the observation that "one similar to which has not, I believe, been recorded in the annals of midwifery practice." Even practitioners well experienced in midwifery, theoretical as well as practical, are occasionally puzzled by these complicated pregnancies, and a case recorded by such a well-qualified observer as Dr. F. H. Champneys may be used to illustrate this point. In 1877 he was called by the resident midwifery assistant at St. Bartholomew's Hospital to a woman, 25 years of age. The assistant, Dr. Maberley, recognised the case to be one of labour complicated with a fibroid, and he determined to dilate the mouth of the womb and attempt delivery; but this being impracticable, and thinking that craniotomy or perhaps Cæsarean section might be required, he sent for Dr. Champneys, who was acting for the physician-accoucheurs. Dr. Champneys could not at first satisfy himself whether he had to deal with an extra- as well as an intra-uterine twin, an ovarian tumour, or a fibroid. He succeeded in pushing the tumour out of the pelvis, and as it could then be felt above the pubes, he punctured it through the hypogastrium with a trocar; as no fluid issued, Dr. Champneys decided it was a fibroid. Chloroform being administered, a stillborn child was, after some difficulty and "the expenditure of unusual force," extracted. This

* 'Brit. Med. Journ.,' 1871, vol. i, p. 586.

happened on January 10th. A few days later the tumour was septic and sloughing, and the patient continued so ill that she was conveyed into St. Bartholomew's Hospital. On February 19th, exactly five weeks after her terrible delivery, a sloughing fibroid escaped from the uterus. She now began to improve, and left the hospital eight weeks after delivery. This case is recorded in the "St. Bartholomew's Hospital Reports," 1877. Dr. Champneys also took pains to collect from the current literature of that period quite a large number of records, which show that fibroids often complicate labour *and frequently cause death.*

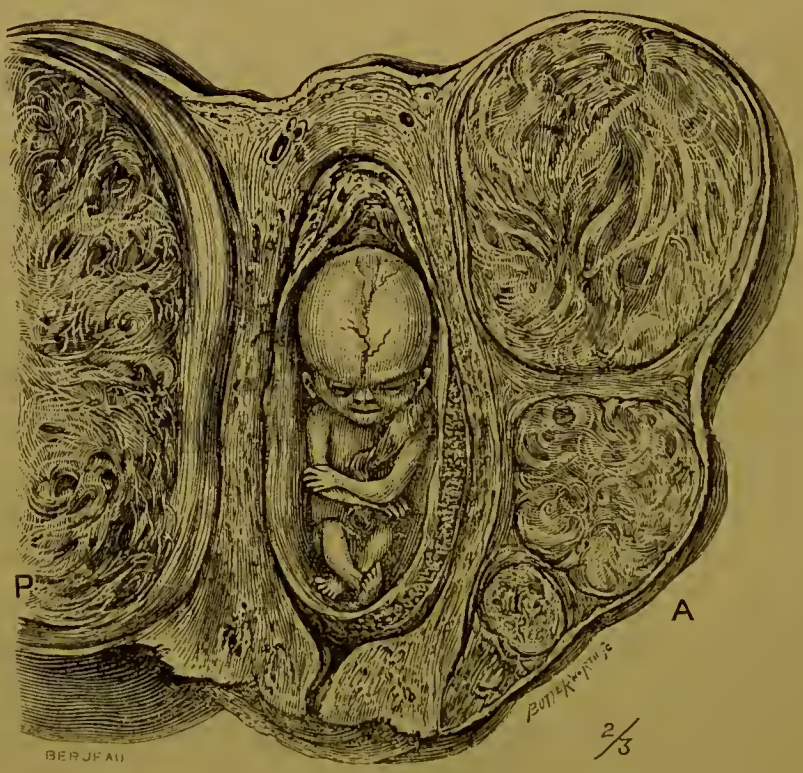

FIG. 3.—A gravid uterus, with fibroids, in sagittal section. At the beginning of the third month impaction occurred; this was relieved, and as the uterus with its tumours was too long to lie in its natural position axial rotation occurred. The antero-posterior length of the distorted organ was 20 centimetres. Only a portion of the large tumour is shown in the figure. A. Anterior aspect of the uterus. P. Posterior aspect of the uterus.

A comprehensive study of the cases in which fibroids complicate pregnancy indicates quite clearly that the life

of the woman is in jeopardy, not only so long as the fœtus remains within the uterus, but also when it is expelled, whether this occurs prematurely or at the full time. The dangers may be set down in the following order: 1. The presence of the tumour not only leads to impaction, but tends to produce abortion. In this event the mother sometimes dies from hæmorrhage. 2. A submucous fibroid may become septic and slough. More rarely a submucous fibroid may be driven out before the presenting part; more frequently it is extruded about five or six weeks subsequently to the delivery of the child. 3. A submucous fibroid may become œdematous, and when the uterus empties itself, the tumour may inflame and lead to peritonitis or the formation of extremely vascular adhesions. 4. Occasionally a pedunculated subserous fibroid possesses such a long pedicle that it will become incarcerated in the pelvis and simulate an ovarian tumour. This condition is fortunately rare. It will be an advantage to illustrate some of these conditions by the details of actual cases. An early (if not the earliest) sign to lead a pregnant woman with a fibroid in the uterus to seek relief is pain. This is in the majority of cases due to impaction.

Case 2.—A woman, 30 years of age, married in October, 1897, and, after missing three menstrual periods, was seized with severe pain in the pelvis and retention of urine. Dr. Mills found a mass in the pelvis which he regarded as a retroverted gravid uterus. With the aid of an anæsthetic he succeeded in pushing the mass out of the pelvis, but found that a "swelling" had appeared in each iliac fossa. These "swellings" were very tender, and the patient complained of great pain. It was clear that either a fibroid of the uterus or an ovarian tumour was complicating pregnancy. Prompt measures were taken, and next morning I performed cœliotomy, and found a fibroid growing from the posterior wall of the uterus lying in the right iliac fossa, and a smaller tumour in the anterior wall occupied the left iliac fossa. I removed the uterus and the

left ovary and Fallopian tube. The patient recovered, and was in excellent health in 1900.

A study of the uterus after its removal is very instructive. It will be seen on reference to Fig. 3 (which was

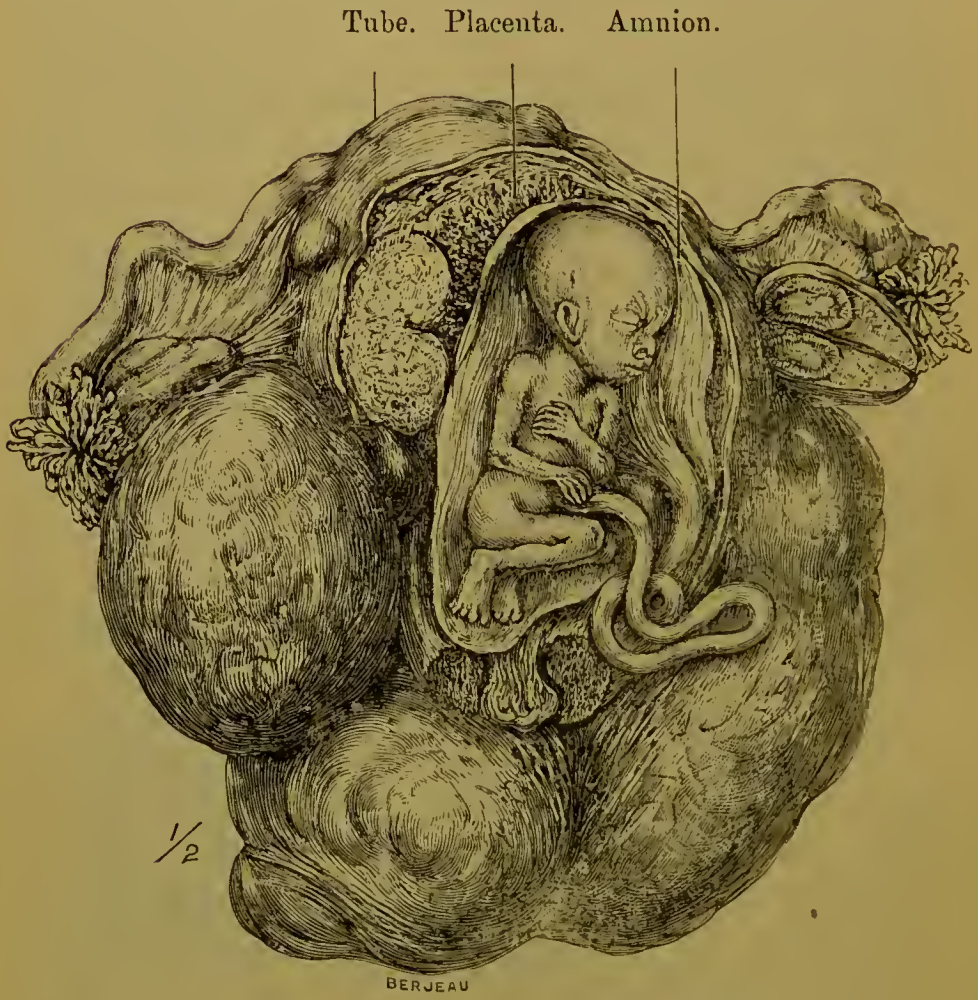

FIG. 4.—A pregnant uterus, with multiple fibroids, removed from a single woman, aged 31 years. The operation was undertaken because the tumour had undergone rapid enlargement. The patient absolutely denied the probability of pregnancy. (Museum of St. Mary's Hospital.)

drawn from the parts after they had been carefully hardened and bisected) that the total antero-posterior length of the uterus is 20 centimetres. The average conjugate diameter of a pelvis with the soft parts in position is about

10 centimetres, so that it was quite impossible for this uterus to be accommodated in its normal position in the pelvis. It appeared to me that the fibroid on the posterior wall of the uterus became gradually impacted in the pelvis as the uterus enlarged after conception, and at last induced retention of urine by compressing the urethra. When Dr. H. H. Mills relieved the impaction, axial rotation took place to the extent of a quarter of a circle, due to the accommodation of the fibroids in the iliac fossæ, hence the pain and acute suffering which supervened after the uterus was pushed out of the true pelvis.

The study of this case induced me to look very carefully into the clinical records of cases where trouble arose early in the course of pregnancy associated with uterine fibroids, and there is one fact which stands out in a very significant manner—in quite a large number of instances the patient seeks relief because her tumour has increased rapidly and causes pain, but she rarely suspects that she is pregnant. It is important to remember this even in cases where women have lived in sterile wedlock many years. The following case will serve as an example.

Case 3.—A woman, 44 years of age, had been married 14 years and had never been pregnant. On examination an abdominal tumour was found which caused great pain, and as it seemed to be quickly increasing in size the patient sought admission into the Middlesex Hospital. Mr. Andrew Clark performed hysterectomy, as the uterus was occupied by two large submucous fibroids. The uterus also contained a fœtus of about four and a half months. The patient made an excellent recovery.*

The museum of St. Mary's Hospital contains a specimen which illustrates in an unmistakable way the futility of relying on the statements of unmarried women when pregnancy is concerned. The preparation (Fig. 4) is a uterus deformed by fibroids, and occupied by a fœtus of

* 'Middlesex Hospital Reports,' 1897, p. 218.

about the fourth month of gestation removed from a single woman, 31 years of age; the operation was undertaken because the "tumour" had undergone rapid enlargement, and the patient absolutely denied the probability of pregnancy.

In each of these cases the fact of the uterus being gravid was overlooked. The line of treatment adopted probably saved each patient a serious illness.

The impaction of a uterus with fibroids secondary to conception is not only responsible for pain, and in a certain proportion of cases to retention of urine from direct pressure on the urethra, but it probably accounts for the frequency with which abortion occurs under these conditions, and it is interesting to observe how even a relatively small fibroid will impede the ascension of the uterus as it enlarges during a pregnancy, and give rise to great trouble. For example, a woman under my own care, four months advanced in pregnancy, complained of pain due to a "lump" in the left iliac fossa. This lump elicited a variety of opinions at a consultation held to determine the course of treatment. I regarded it as a sessile fibroid of the uterus near the brim of the pelvis. At the operation this was found to be the case. The tumour in shape was something like a kidney and about as big, and had grown from the anterior wall of the uterus near the left cornu; as the uterus increased, this fibroid became impacted under the pelvic brim. The uterus continued to rise out of the pelvis as the pregnancy progressed, but the fibroid remained fixed, and as a result the uterus slowly rotated, and at the time of the operation the degree of rotation amounted to rather more than a quarter of a circle. I enucleated the tumour. The patient recovered, the pregnancy went to term, and she was successfully delivered of a living child.

Case 4.—In December, 1900, a woman, 32 years of age, was placed under my care with the following story. She had been married four years and had twice miscarried,

and was now pregnant for the third time. The pregnancy had advanced to the fourth month, when she began to experience great pain in the pelvis; but being particularly anxious to possess a living child, Mr. L. E. S. Beer had kept her in bed for a month. As the uterus rose in the abdomen a tumour became obvious, but we could not determine its precise character. As it was clearly the source of her pain, I explored it through an oblique incision to the right of the linea alba, and found a subserous fibro-myoma growing from the uterus and adherent to the bladder. The tumour was of about the size of a tennis-ball, and I succeeded in peeling the bladder from it without opening its cavity. The patient made an uninterrupted recovery, the pregnancy continued undisturbed. In May the patient was delivered of a healthy boy; but the uterus was tuberose with fibroids, yet at the time of the operation no other tumours were detected, although the uterus was carefully examined. My disappointment did not end here, for on the third day it was found that the child had an imperforate pharynx, from which it died.

I have subjoined some cases in the form of a table, because I think few surgeons really appreciate the way in which the uterus tolerates surgical operations even when pregnant. In Dr. W. H. Fenton's case I was present at the operation, which was undertaken with the impression that the tumour was of ovarian origin, and had probably undergone axial rotation. The fibro-myoma in that case was larger than a cricket-ball. An important clinical point, and one that requires emphasizing, is this: in all the cases in the table the patients complained of great and continuous pain, and it was for the relief of pain that the operations were undertaken. In nearly all the cases the operation was undertaken on an erroneous diagnosis. In my first case the swelling was thought to be a pyosalpinx. Knowsley Thornton considered the tumour in his case to be an ovarian cyst, and Morris diagnosed the swelling in his patient to be of renal origin.

TABLE I.—*Cœliotomy for the Removal of Subserous Fibroids during Pregnancy.*

No.	Operator.	Month of pregnancy.	Result.	Reference.
1	Thornton . .	Seventh	Died	Transactions of the Obstetrical Society of London, vol. xxi, p. 163.
2	Bland-Sutton .	First	Went to term	Clinical Journal, vol. xi, p. 305.
3	Bland-Sutton .	Fourth	,,	Ibid., vol. xvi, p. 404.
4	Morris . .	Fifth	,,	Transactions of the Obstetrical Society of London, vol. xl, p. 256.
5	Fenton . .	,,	,,	Unpublished.
6	Bland-Sutton .	,,	,,	This lecture.
7	Muir Evans .	Fourth	,,	Brit. Med. Journ., 1899, vol. ii, 1673, and private letter.
8	Bland-Sutton .	,,	,,	Unpublished.

I have often recognised pedunculated and sessile fibroids in a pregnant uterus that caused no inconvenience; but when a fibroid interferes with the bladder or the bowel it will cause pain; and should it become incarcerated in the recess of the sacrum or under the brim of the pelvis and prevent the uterus rising into the abdomen, it will also cause pain; but, what is more significant, it will provoke abortion.

Fibroids, when they complicate pregnancy, are not only dangerous in that they frequently cause abortion, but may obstruct delivery when the pregnancy goes to full time; the duration of pregnancy may be absolutely normal, and the child may be born without any hindrance; but the fibroid itself is inimical to the life of the mother.

One of the great dangers which surround all women during their lying-in is septic endometritis, and this is a serious sequel to delivery with a normal uterus, but it is a more serious matter when an infected uterus contains

fibroids. This is a subject to which I have given close attention, and it is worth our careful consideration. Every fibroid is completely invested by a covering of fibrous tissue, which not only isolates it from the tissues of the uterus, but also supplies it with blood, for the vessels on which the fibroid depends for its nourishment and growth are derived from those ramifying in the capsule. When this capsule is damaged the fibroid invariably dies; and if septic organisms gain access to it, gangrene is the inevitable result. This is always a dangerous condition, and in many instances entails the death of the individual.

Necrosis and subsequent gangrene of a fibroid arise usually from injury, and this may be due to the examination of the uterus with a sound, dilators, curette, or the forceps of the accoucheur. Occasionally it happens as a result of the efforts of the uterus itself to expel a pedunculated fibroid. It will serve our purpose to study a case of this kind in detail, as it will enable us to appreciate more readily what happens when a fibroid is injured in the course of a labour.

Case 5.—Some years ago I saw a woman with a large black mass protruding from the vagina; blood oozed freely from it, and she was extremely weak and ill, with a temperature of 103° F., and a pulse-rate of 120 to the minute. This mass was a pedunculated fibroid which had been extruded from the uterus and had become septic; its capsule had been destroyed, and the whole tumour was in reality a stinking slough. Under chloroform it was removed, and the uterine cavity was thoroughly irrigated with sublimate solution (1 in 2000). For a few days all seemed well—there was no pain or tenderness. On the evening of the third day after the removal of the slough the patient complained of sudden abdominal pain, followed by the signs of shock; this gradually passed off, and severe peritonitis followed, and she died two days later. At the *post-mortem* examination the uterine cavity was found to be occupied by sloughs of endometrium, and the mucous membrane of

the Fallopian tube had also sloughed; fragments of it were projecting through the unclosed cœlomic ostia of the tubes, and septic fluid had also leaked in the general peritoneal cavity and set up fatal peritonitis. This instructive specimen is preserved in the museum of the Royal College of Surgeons of England. It formed one of the series of specimens which accompanied my essay for which that College awarded me the Jacksonian Prize in 1892. This specimen illustrates extremely well the pathological changes which arise in fibroids subsequently to abortion or delivery. The expulsive efforts of the uterus force out the fœtus, and in a fair proportion of cases they will cause the fibroid to extrude into the vagina, where it becomes septic, and initiates a condition of things such as existed in the case just described. When the tumour is small and sessile, the nature of the case is not always suspected until profuse bleeding from the uterus, and the occurrence

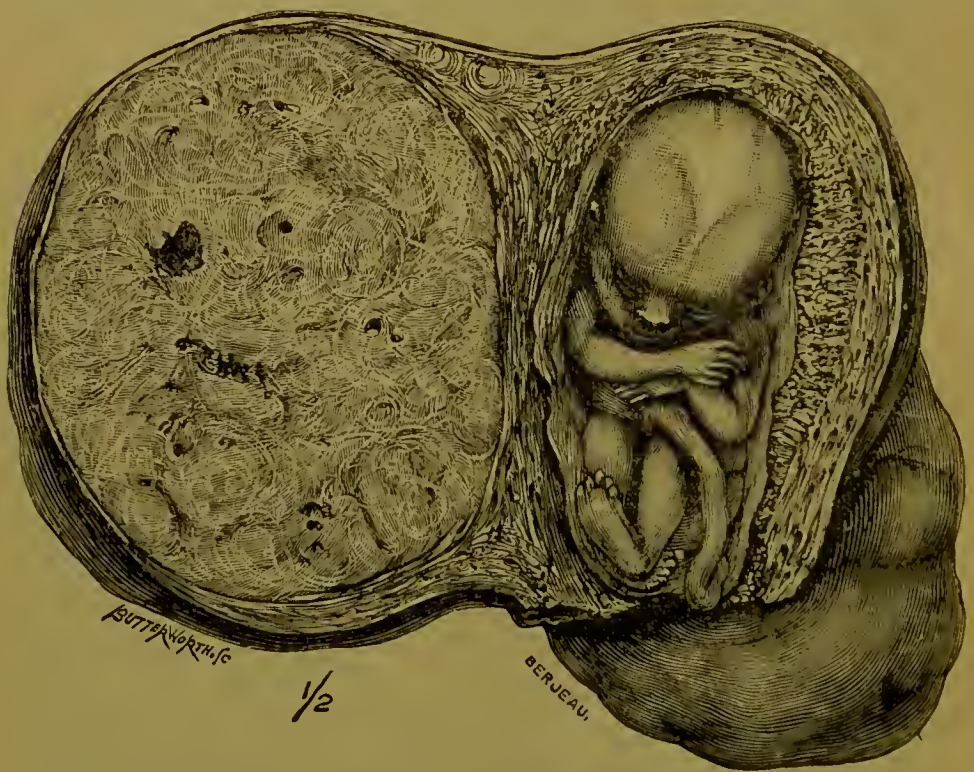

Fig. 5.—A pregnant uterus, with fibroids, removed by supra-vaginal hysterectomy from a woman aged 44 years. The fœtus is about four and a half months (Case 1, Table II). (Museum of St. Bartholomew's Hospital.)

of urgent clinical signs of sepsis, lead to a physical examination of the uterus.

It does not necessarily follow that in every parturient woman with a fibroid the tumour becomes septic. Indeed, a septic fibroid does not always cause death; for example, Dr. Champneys' patient had a grave illness, and may be described as being in the "jaws of death" for many weeks, until the sloughs escaped and the septic signs abated. There is a wonderful means by which nature blocks one avenue by which lethal effects are produced from septic processes arising in the uterine cavity. When the infective process extends from the endometrium to the Fallopian tubes, it often leads to occlusion of the cœlomic ostium of the tube, and thus prevents the direct leakage of septic matter into the peritoneal recesses of the pelvis. This happens more frequently than many of us suspect, and I have on several occasions drawn attention to the fact that septic endometritis after labour is responsible for a far larger proportion of cases of acute and chronic salpingitis than gonorrhœa.

I am anxious not to be misunderstood in relation to sepsis and fibroids. It does not by any means follow that when a parturient woman has a fibroid in her uterus that it will of necessity become septic during her puerperium; much will depend on the care and skill of the medical attendant, the midwife, and the nurse; and even if the tumour does become septic and slough, it need not, as I have said before, destroy the patient. The ultimate effect will, in a very large measure, depend upon the variety of the micro-organism by which the patient has become infected.

It has happened to me on many occasions to perform hysterectomy on account of fibroids, and there is one very important feature which comes out in the clinical history of the patients: many state that they never had any pain or suspected the existence of a tumour till the occurrence of a miscarriage; since then good health had been denied them. When one gets a definite statement of this kind, it

generally happens at the operation that one or both Fallopian tubes have the cœlomic ostium occluded, and the tube distended with sterile serum and sometimes with pus. These distended tubes are the legacy of a septic endometritis supervening on the abortion. On one occasion I had an excellent opportunity of studying the early stage of septic infection in a fibroid.

Case 6.—A woman, 35 years of age, had conceived and, as far as she could reckon, the pregnancy had advanced about three and a half months when such disturbance ensued as led the medical man in charge to fear the existence of tubal rather than uterine pregnancy. We could not decide whether the pregnancy was uterine or tubal, but we also determined that it was complicated with a tumour; the same evening abortion occurred. Dr. Champneys also saw the patient with us, but could not decide whether the tumour was ovarian or a fibroid, and we decided to leave the tumour until after the puerperium unless dangerous symptoms supervened. A few days later the abdominal signs were ominous, and on the ninth day of the puerperium I performed cœliotomy, and removed a pedunculated subserous fibroid as big as a cocoa-nut. This fibroid adhered to the adjacent bowel, the omentum, and the peritoneum; it was very soft and œdematous, and the abdomen contained a quantity of yellow glutinous lymph. Microscopic examination showed the tumour to be thoroughly infiltrated with inflammatory cells. The patient made an uneventful recovery, and 30 months afterwards became the mother of a fine infant.

The condition of the tumour in this case furnished me with some interesting points. It has happened to me whilst operating on subserous fibroids, and also in watching operations by other surgeons, to find the tumour adherent to the great omentum, and this structure had the epiploic arteries and veins enormously developed, the arteries being in many instances as big as the radials: thus the whole of the omentum connected with the tumour

resembled an enormous rete composed of large tortuous arteries, veins, and occasionally lymphatics as big as the cephalic vein; the dilated lymphatics contained fluid of a pale straw colour. The contrast of the maroon tint of the blood in the arteries, the deep blue of the veins, and the light yellow of the lymphatics with their very thin walls, formed an anatomical picture scarcely likely to be forgotten by those who have had to deal with such a condition. The interest in relation to our present study is this: all the cases in which I have met with this great development of the blood-vessels in the omentum have occurred in patients who have been pregnant, and they have always furnished the definite statement that the tumour began to trouble them after confinement or miscarriage, and that they had a long illness. This I would interpret in the following way. Labour or abortion was complicated with a fibroid. The endometrium became infected, and this extended to the fibroid and led to the formation of adhesions and their gradual vascularisation from the omental vessels; eventually free anastomosis arose between the vessels in the capsule of the fibroid and the epiploic arteries. The most extraordinary example of a pathological arterial rete of this kind I have ever seen was in a case of tubal pregnancy which went to term, and the placental vessels directly anastomosed with the enlarged vessels in the great omentum.

The facts at our disposal indicate very certainly that uterine fibroids, even more than ovarian cysts, are a grave menace to successful pregnancy, and in a large number of cases are directly responsible for a premature termination of the pregnancy; and when abortion happens the patient requires to be safeguarded most strictly against infection, for it may involve the fibroid, and in this event the patient not only runs a very great risk of losing her life, but she certainly will have a long illness, and in many instances a serious operation may be necessary to prevent her from becoming a chronic invalid. We must not forget that a woman may have one, and indeed several, fibroids in her

uterus, and yet be the happy and healthy mother of children; but no one will deny that the presence of a fibroid in a gravid uterus is an additional peril to those which are proverbially associated with pregnancy. It occasionally happens that a woman comes under observation known to be suffering from a combination of pregnancy and fibroids, and a careful examination discloses the fact that if the pregnancy goes to term, delivery by the natural passages would be impossible. In these circumstances hysterectomy is justifiable. This is illustrated by a specimen in the museum of St. Bartholomew's Hospital (Fig. 5). It is a gravid uterus with a large fibroid in its wall, removed by cœliotomy from a woman, 44 years of age, under the care of Dr. W. S. A. Griffith. He found that the fibroid so blocked the pelvis that delivery would be impossible. It was removed by Mr. Harrison Cripps.

Case 7.—A married woman came under my care in great distress because she knew that she had fibroids, and feared that conception had also occurred. Her distress

Fig. 6.—A pregnant uterus, with fibroids, removed from a woman who five years previously had nearly lost her life from the obstruction the fibroids offered to the passage of the fœtus. (Case 4, in Table II.)

was due to the fact that five years previously she had been in the same straits, and though prematurely confined, had been so ill and ran such a narrow risk of dying, that she wished to avoid such a contingency if possible. At a consultation it was decided that one of the fibroids so blocked the pelvis, that if the pregnancy continued the fœtus could not be born through the natural passage. After very careful consideration hysterectomy was advised and successfully carried through (Fig. 6).

We may now turn our attention to cases where, in spite of the fibroid, pregnancy has continued uninterruptedly to term, and where labour is imminent or actually in progress when the accoucheur finds the way barred by a tumour which he regards as a fibroid. A study of the literature indicates that in Great Britain the principles which used to guide the conduct of such labours were as follows. Attempts should be made to push the tumour out of the pelvis, and then extract the fœtus by version or with the aid of forceps. If the tumour cannot be pushed out of the pelvis, then Cæsarean section should be performed. In recent years, however, when the impaction cannot be relieved it has become the practice with many obstetric surgeons to perform Cæsarean section and then to remove the uterus, a method which has been eminently successful. It is also a practical fact, well worth bearing in mind, that when the uterine tissues are softened by the pregnancy and the ligaments are stretched by the growing uterus, hysterectomy is a simpler operation, and the convalescence is usually quicker than when performed for fibroids alone. In order to show that this improved method of dealing with fibroids complicating pregnancy and labour is finding favour, I have added a list of some recently recorded operations which have been performed in London with the hope that other operators may be induced to record their experience.

TABLE II.—*Hysterectomy for Fibroids complicating Pregnancy and Labour.*

No.	Operator.	Month of pregnancy.	Result.	Reference.
1	Cripps, H.	Fourth	Recovered	Museum of St. Bart.'s Hosp.
2	Clark	Fourth	Recovered	Middlesex Hosp. Reports, 1897, p. 218.
3	Bland-Sutton	Third	Recovered	Clin. Journ., vol. xi, p. 305.
4	Bland-Sutton	Second	Recovered	Ibid., vol. xvi, p. 401.
5	Gow	Eighth	Recovered	Trans. Obstet. Soc. Lond., vol. xxxix, p. 7.
6	Galabin	Sixth	Recovered	Ibid., vol. xlii, p. 258.
7	Horrocks	Fifth	Recovered	Ibid., vol. xlii, p. 242.
8	Routh	Ninth	Recovered	Ibid., vol. xlii, p. 244.
9	Spencer	Ninth	Recovered	Ibid., vol. xxxvii.
10	Duncan	Second	Died	Middlesex Hosp. Reports, 1897, p. 182.
11	Duncan	Fourth	Recovered	The Lancet, vol. i, 1900, p. 613.
12	Doran	Fifth	Recovered	Ibid., 1901, vol. i, p. 621.

It cannot to my mind be too strongly set forth that in cases where a fibroid has obstructed labour and has been successfully "pushed up," as the phrase goes, if any dangerous symptoms supervene during the puerperium then cœliotomy, followed by myomectomy (or hysterectomy if the need be), should be carried out without delay. That myomectomy and enucleation are successful during the puerperium I have already testified in this lecture (Table I.).

I am well aware that in a very large number of instances fibroids and pregnancy coexist and no harm ensues, for though the tumour occupies the pelvis in the early stages, it is so much "part and parcel" of the uterus that, as the enlarging organ rises out of the pelvis, it carries the fibroids with it. In the case of an incarcerated ovarian

tumour it is different, for the more the fundus of the uterus ascends the more the ovarian pedicle elongates, and the more perfect the incarceration becomes.

FIG. 7.—Pregnant uterus with a large sub-serous fibroid; removed from a woman 31 years of age. After the operation and before the uterus lost its tissue-life the anterior wall was cut away, in a few minutes, as the uterus contracted the fœtus and its membranes were extruded through the incision. (From Case 11, Table II.)

From a very broad survey of this question I have arrived at the following deduction: ovarian tumours have

given more trouble to pregnant and parturient women than fibroids; but fibroids have been far more lethal, as they so frequently destroy puerperal women from sepsis. The whole subject is an instructive study of the baleful effects which environment often imposes on so-called innocent tumours.

LECTURE III.

Pregnancy complicated by Cancer of the Neck of the Uterus; Tumours of the Pelvis; Misplaced Viscera; Sequestered and Quick Extra-uterine Fœtuses.

We will begin this lecture with the consideration of what to my mind is the most appalling of all the complications of pregnancy—namely, cancer of the neck of the uterus. One of the most significant clinical features in regard to cancer of the neck of the uterus is the fact that it is almost exclusively confined to women who have borne at least one child. In 100 women with cancer of the cervix, which I carefully investigated in regard to this point, there was only one exception, and she was married. Even in this case a miscarriage could not with certainty be excluded. Czerwenka has recorded an interesting observation bearing on this subject. A woman, 35 years of age, had a double uterus, with cancer of the left cervix. This uterus was removed by panhysterectomy. The vagina was double; coitus was practised in the left half. The left cervix had become cancerous, the corresponding uterine body contained two small fibroids, and the left Fallopian tube had become a pyosalpinx.

It is somewhat difficult to understand how a woman with cancer of the uterus can conceive, but it is quite certain that it happens, and even when the disease is well advanced; further, it is by no means easy in the early

stages to detect the complication, because in many cases cancer of the cervix leads to enlargement of the uterus. Dr. Playfair exhibited a uterus at the Obstetrical Society of London, in which he had performed vaginal hysterectomy for cancer of the neck, and to his astonishment he found that it contained an embryo of the second month.* I feel convinced that in some cases cancer of the neck of the uterus grows more rapidly than some of us realise, and it is not beyond the bounds of reasonable probability that this woman's cervix was healthy at the time she conceived, and the amount of diseased tissue present at the time of operation represented two months' growth. It is consistent with what we know of the growth of cancer in the breast, for in this situation carcinoma increases with extreme rapidity during lactation. Judging from my own observations, I think that cancer of the neck of the uterus is not an uncommon complication of pregnancy, but I believe that cases in which uterine cancer offers obstruction to delivery are rare, and this for two reasons: cancer of the neck of the uterus predisposes to abortion, and when it has advanced to such a stage as to occupy the vagina with an obstructive mass, the effect of it upon the patient is such as endangers and ofttimes kills the fœtus. Indeed, it may be laid down as a principle that when considering the question of Cæsarean section upon a woman with cancer of the cervix, the intending operator should first satisfy himself that the child is alive. The following case not only illustrates this fact, but will serve to demonstrate that it is a fortunate circumstance in many cases in which this dreadful combination of cancer of the cervix and pregnancy exists, that there is a great tendency for abortion to occur. A poor woman, about seven months pregnant, was admitted into the Chelsea Hospital for Women with the hope that I would perform Cæsarean section. On examination the extensive nature of the cancer clearly barred any operative measures for its relief, and although there could be no doubt that the uterus was gravid, there existed a

* 'Transactions of the Obstetrical Society,' vol. xxxvii, p. 198.

good deal of doubt about the vitality of the fœtus. I decided to watch the case and await events, and if we obtained clear evidence that the child was viable, we could then take steps for deliverance unless miscarriage happened, and there were threatenings of such an event. About five days later abortion occurred, and a dead, shrivelled fœtus escaped from the uterus. There was very little bleeding, and in due course the uterus settled down, and eventually the woman returned to her home and died some month later.

Now and then it will happen that such cases urgently demand surgical treatment, and the surgeon will have to exercise his mind as to the best method of dealing with the complication. I was on the horns of this dilemma in 1899 when a woman, 33 years of age, and mother of several children, was transferred from Queen Charlotte's Hospital to the Chelsea Hospital for Women under my care. The poor patient was eight months advanced in pregnancy, and had extensive cancer of the neck of the uterus. It surrounded the vaginal portion of the cervix like a ring, but did not invade the vaginal walls or infiltrate the broad ligaments. Although the conditions as to remote results were not too propitious, operation was possible, and the immediate outlook was not too bad. The case was the subject of a very anxious consultation, and there were three courses suggested: (1) induce labour and remove the uterus after the puerperium; (2) amputate the cervix and let labour follow; and (3) abdominal panhysterectomy. I deliberately chose the third course, as it would enable me to rescue a viable child, and at the same time remove the cancerous uterus. The operation was carried out in the following way. The patient was etherised, and the abdomen was freely incised in the middle line; the broad ligaments were clamped with forceps and cut; the uterine arteries were exposed and clamped, and the uterus with its contents was cut away from the cervix and handed to an assistant. Thus, whilst I was occupied in securing the vessels, an assistant opened the uterus and extracted the

child. This is, as far as I know, the first record of a child being delivered alive from a uterus detached from its mother. Having secured the vessel I then removed the cancerous cervix, having taken the precaution to protect the intestines by sterilised towels. The vaginal edges were sutured, and the peritoneum closed over it, and the abdominal incision secured as usual. The patient did not rally well from the operation, and paresis of the intestines supervened, and she died on the fourth day. The child flourished well during many days in an incubator; then he began to waste, and died when about 14 days old.

It occasionally happens that even when the child is dead cancer may induce such changes at the neck of the womb as to render surgical interference indispensable. In 1891 a woman, 35 years of age, mother of six children and known to have cancer of the neck of the uterus, was taken in labour. Until the onset of "the pains" no one suspected pregnancy. On examination a hard cancerous infiltration of the cervix was found, and the umbilical cord had prolapsed and ceased to pulsate. The woman was admitted into the Middlesex Hospital; 48 hours later Dr. W. Duncan performed Cæsarean section, and extracted a dead and putrid child with its placenta. The patient died 41 hours after the operation.*

A study of the literature, which, by the way, chiefly consists of isolated records of cases, indicates that the course usually followed when pregnancy, complicated with cancer of the cervix, goes to term, is to perform Cæsarean section, especially as the cancer is, as a rule, too extensive to permit radical surgical measures. When the cancerous condition of the cervix is detected before the mid-period of gestation, it would be desirable to empty the uterus and perform vaginal hysterectomy, if the disease is not so extensive as to preclude the hope of a successful issue. On the other hand, when cancer of the cervix is detected in the late stages of pregnancy, the cervix may be removed without disturbing the pregnancy. In one successful

* 'Middlesex Hospital Reports,' 1891, p. 152.

case, performed in the seventh month, pregnancy went to term, and labour occurred naturally. A year later there was extensive recurrence (Wallace). A study of the

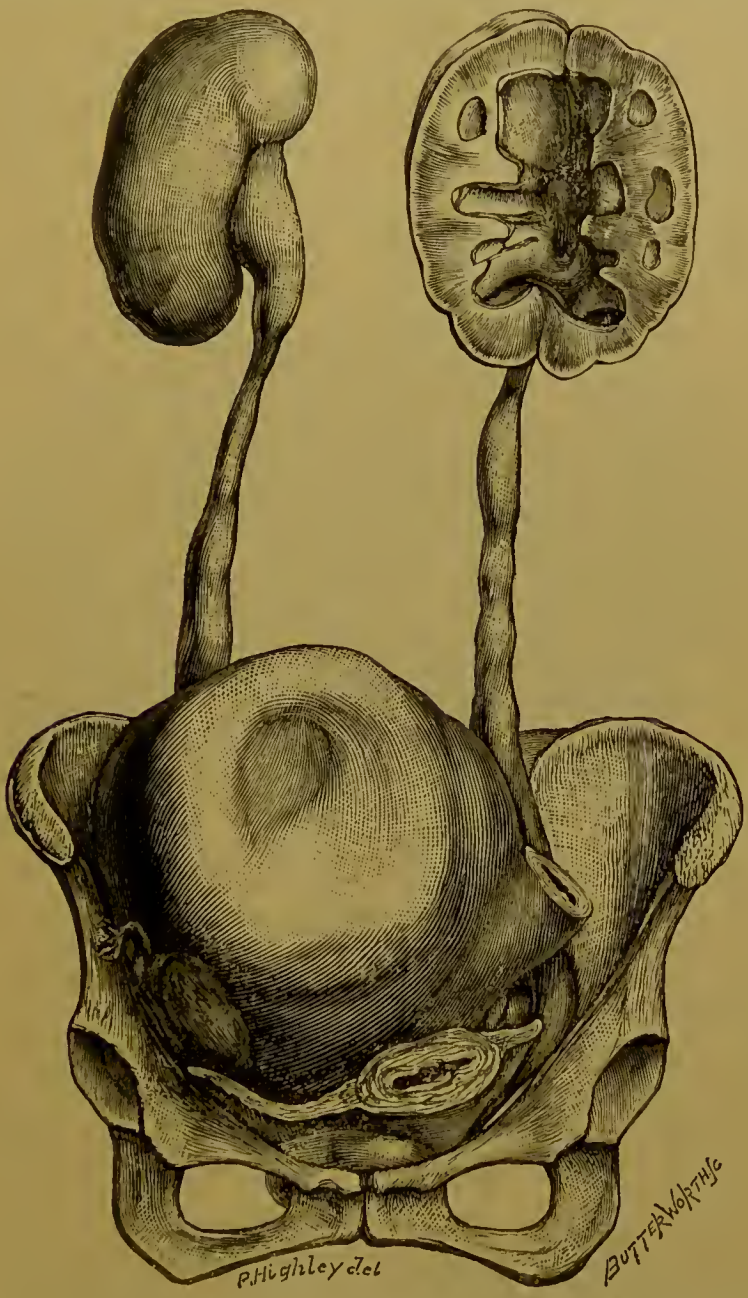

Fig. 8.—Pelvis with a large chondroma arising from the sacrum and complicating pregnancy at term. (Museum of University College, London.)

records indicate that the best operative results have followed radical operations by the vaginal route.

Cancer of the rectum and pregnancy.—Of this unusual

complication and obstruction to delivery I only know of one example. The patient was in the Middlesex Hospital Cancer Wards, under the care of the late Mr. J. W. Hulke in 1894, for cancer of the rectum for which colotomy had been performed. On admission the patient was found to be pregnant, "and when the full time came that she should be delivered," Mr. Hulke transferred the patient to the ward for the diseases special to women, and Dr. Duncan successfully performed Cæsarean section.*

Tumours of the pelvic bones.—Among the rare obstructions to labour must be reckoned tumours of the pelvis other than those which arise from the uterus, ovary, or Fallopian tubes. In the text-books of midwifery a chondroma arising from the pelvic bones is nearly always mentioned; it is an extremely rare tumour independent of pregnancy, and when it complicates this condition it offers a formidable obstruction to delivery. The remarkable effects which such tumours produce on the pelvic viscera are shown in Figs. 8 and 9, taken from a specimen in the museum of University College, London, obtained from a woman, 21 years of age, who was admitted to the hospital in 1893 in labour. The patient came under the care of Dr. Herbert Spencer, who performed hysterectomy and saved the life of the child. The mother died on the ninth day after the operation. The parts concerned are shown in sagittal section; it will be seen that the tumour is intimately connected with the third, fourth, and fifth sacral vertebræ, and that it has utilised all the available space in the true pelvis and has displaced and compressed the rectum, vagina, and urethra against the pubes. The ovoid shape of the tumour, and in consequence its elliptical outline, is characteristic of all tumours which mould themselves in the true pelvis—*e. g.* the pelvic segments of large ovarian cysts and cervical fibroids and the head of the fœtus after a long labour. The most lethal effect of the tumour, even more than the obstruction it offered to delivery, is the insidious change it produced on the ureters, for both

* 'Middlesex Hospital Reports,' 1893, p. 215.

were dilated, and the pelvis of each kidney contained pus. A perusal of the clinical post-operative history indicates that she probably died in consequence of the great disorganisation of the kidneys. The tumour is a chondroma, part of which has ossified; it has a firm fibrous capsule. The spaces in the tumour are spurious cavities, due to myxomatous changes in its tissue. This woman was

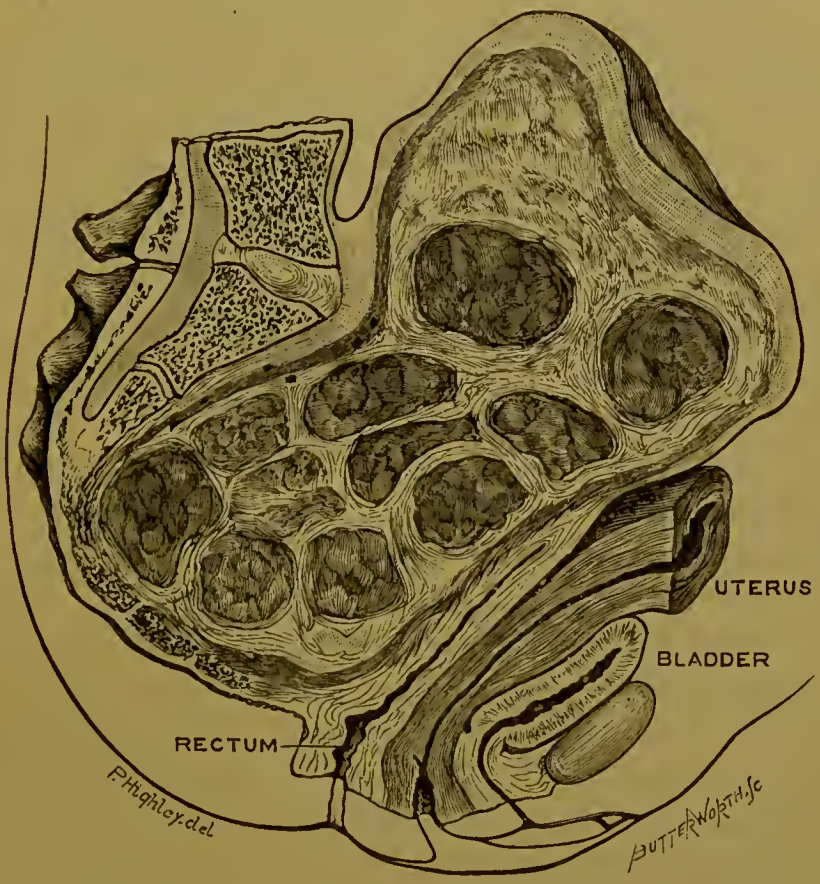

FIG. 9.—The pelvis in the preceding drawing in sagittal section. The dark patches are spurious cavities due to softening of the cartilage.

known to have a tumour in her pelvis seven years previously to her tragic death. The structure of the tumour is consistent with such a history.

A somewhat similar though not so severe a case was placed under my care in the Chelsea Hospital for Women by Dr. W. H. Fenton. The patient, a married woman, 32 years of age, mother of two children and five months preg-

nant, was found to have a tumour in the pelvis which so narrowed the outlet that delivery by the natural channel would be an impossibility. On careful examination the tumour was thought to be an ovarian dermoid incarcerated in the pelvis, and it was decided that an attempt should be made to perform ovariotomy. There were other features in the case which demanded consideration: the urine contained albumin (about one half), and the uterus was so large as to raise the suspicion of hydramnion. The general aspect of the patient was not good. However, the case demanded surgical intervention, and I performed cœliotomy. Instead of an ovarian dermoid I found a large, hard, solid tumour growing from the anterior face of the coccyx and lower sacral vertebræ, extending almost completely across the pelvis. I had no alternative but to perform hysterectomy, although this was a serious operation in view of albuminuria. Fortunately, the patient made one of the most rapid recoveries I have ever known after hysterectomy, and she left the hospital convalescent in fourteen days. She reported herself at the end of three months, and an opportunity was taken to examine the urine; the amount of albumin had not altered. We kept in touch with the patient, and learned that she died two years after the operation from pneumonia.

Post-rectal dermoids.—In considering pelvic tumours it is well to bear in mind that dermoid tumours may occupy the hollow of the sacrum behind the peritoneum and the rectum, and be absolutely independent of the ovaries; this is proved by the fact that they occur in men as well as in women. A case was carefully observed in the Royal Infirmary, Newcastle-on-Tyne. The patient, a woman, 49 years of age, was under the care of Mr. Frederick Page, and he removed the tumour through the perineum by means of a transverse incision between the anus and the coccyx. He extracted the pultaceous matter with a spoon, and then enucleated the wall of the dermoid. The woman recovered. The contents of the tumour weighed three pounds; its walls were furnished with hair, and the tumour

resembled a pumpkin in contour and in size. The best known example of a post-rectal dermoid in a man is recorded by Ord. I collected all the records of post-rectal dermoids I could find, and drew attention to them in my book on "Tumours." The latest contribution to this subject is an article by Skutsch,* and he gives an account of two cases under his own care in women. One of them is especially interesting in association with the subject of this lecture because the patient, a woman 28 years of age, was pregnant at the time she came under observation. This woman had had three children previously and a miscarriage. At the time she came under Skutsch's care she was five months pregnant, and had difficulty with the bladder and rectum. He succeeded in evacuating the cyst contents through a transverse incision in the perineum. The tumour extended as high as the pelvic brim, and he succeeded in extracting a portion of the wall and draining the cavity. The mother recovered from the operation, the pregnancy was not disturbed, and she was delivered at term without difficulty. The cyst wall was carefully investigated microscopically, and determined to be dermoid.

Kidney in the hollow of the sacrum.—It is necessary for a tumour to be composed of very substantial tissues to offer an effective bar to delivery, and, as I pointed out in dealing with ovarian tumours incarcerated in the pelvis by a gravid uterus, in the majority of instances those which proved the most formidable were in nearly all instances dermoids. I am cognisant of one case in which a kidney occupied the hollow of the sacrum and did not oppose delivery, and in its turn the passage of the fœtus does not appear to have affected it injuriously. The facts of the case are not without interest. The patient, a woman, aged 33 years, was known to have a painful swelling behind the uterus, and of a character which suggested a distended Fallopian tube. Cœliotomy was performed by Dr. Heywood Smith, and when the parts were exposed we found the uterus to be of the unicorn variety and to possess one

* 'Zeitschrift für Gebürtshulfe und Gynäkologie,' Band xl, 353.

Fallopian tube and a well-developed ovary on the right side. The left side of the uterus was smooth and rounded, and lacked a broad ligament, ovary, and Fallopian tube, and anything representing the left round ligament. Knowing that this malformation of the internal genital organs is

Fig. 10.—Kidney occupying the hollow of the sacrum. A. Artery. V. Vein. U. Ureter. (Museum of the Middlesex Hospital.)

usually associated with defective development or misplacement of the kidney, corresponding to the defective half of the uterus, I was allowed to make a careful examination of the renal organs. The right kidney occupied its proper position; the left one lay in the hollow of the sacrum

behind the peritoneum, and proved to be the body which we had recognised behind the uterus and thought to be an enlarged Fallopian tube or ovary. The abdominal incision was closed, and the patient made an uninterrupted recovery. About 14 months afterwards the patient conceived, and had the satisfaction of being delivered easily at full term of a fine child.*

Many years ago I prepared a specimen of a kidney occupying the hollow of the sacrum, and placed it in the museum of the Middlesex Hospital (Fig. 10). The parts were obtained from a man, and at the time I drew attention to the fact that a kidney in such a situation in a woman would constitute a clinical puzzle. It is a remarkable fact that within the space of three months I received for examination and report two kidneys removed from the hollow of the sacrum by the same operator from women. One of these kidneys was hydronephrotic. Thus I have knowledge of four cases in which the kidney was a pelvic organ, three in women and once in a man. In one of the instances it was associated with pregnancy and an unimpeded delivery.

The spleen.—One of the rarest complications of pregnancy among the class we are considering is an enlarged and moveable spleen. In May, 1900, a woman, 34 years of age, mother of seven children and two months pregnant, was placed under my care on account of a very mobile, painful, and troublesome swelling in the left iliac fossa, which furnished the physical signs and possessed the shape of a spleen. I performed cœliotomy, and the diagnosis proved correct; the spleen was removed, and the patient made a quick and uneventful recovery. In December the child was born, and the mother reported herself in excellent health, notwithstanding that she lacked a spleen. The full details of this case will be found in the 'Transactions' of the Clinical Society of London, vol. xxxiv, p. 26. I have not been able to find another record of splenectomy during pregnancy.

* 'Lancet,' April 16th, 1898, p. 1051.

A little reflection on the subject of these lectures makes it clear that tumours which may complicate pregnancy constitute a formidable list, and there are occasions when it becomes a matter of great difficulty to determine the nature of an obstructing tumour. I remember on one occasion being present at an operation which was undertaken for a suspected tubal pregnancy, but, strange as it may seem, both Fallopian tubes were converted into large sacs of pus, and the uterus was gravid. But the enlarged tubes were removed, and abortion occurred a few days after the operation. The pregnancy had advanced to the third month. The patient recovered.

Echinococcus cysts.—A remarkable case of "omental hydatids," which occurred in a woman aged 32 years, and seven months pregnant, has been recorded by Knowsley Thornton.* The case is described in great detail, and is worth very careful reading, as showing the great dangers which surrounded abdominal operations during pregnancy even in 1878.

A very remarkable case in which the uterus containing several fibroids simulated retroversion of the gravid uterus has been recorded by Cullingworth. Eventually operative interference was undertaken, and a fœtus of four and a half months, which had developed in the Fallopian tube, was found in addition to the fibroids.†

In many instances, of course, the determination of the precise nature of the obstructing tumour is not of any serious moment; in others it is all-important; and I am sure that many of us, when face to face with some of these difficult cases, have felt like the Prince of Morocco when, hoping to choose the casket containing "fair Portia's counterfeit," he says:

"Some god direct my judgment!"

I have thought it desirable, although not strictly in accord with the title of the lectures, to briefly mention a

* 'Medical Times and Gazette,' 1878, vol. ii, 565.

† 'Transactions of the Obstetrical Society,' vol. xl, p. 285.

serious, though fortunately a very rare, complication of labour—namely, the presence of a fully-developed extra-uterine fœtus in the pelvis. I am persuaded to do this because on one occasion a solid ovarian tumour incarcerated in the pelvis by a gravid uterus led the physician in charge of the case to regard it as an extra-uterine child; also because a sequestered extra-uterine fœtus constitutes in some conditions a very formidable obstruction to delivery.

Labour complicated with sequestered and with "quick" extra-uterine children.—It is a well-established fact that uterine and tubal pregnancy may run concurrently, and both go to term; this may be described as the most dangerous combination to which child-bearing women are liable. The particular form of this combination to which I wish to draw especial attention is that where the woman has an extra-uterine pregnancy which goes to term, and then the fœtus is sequestered in the pelvis. The nature of the case has not been recognised, and in the course of time is almost forgotten. It is a fact that a woman with a fœtus thus sequestered may subsequently conceive in her uterus. Stonham made a *post-mortem* examination on a woman, 43 years of age, who died from bronchitis when seven months pregnant. In the right mesometrium he found a sequestered fœtus, partly macerated, and partly in the soapy condition known as adipocere. The uterus contained a fœtus at about the seventh month of gestation.* Leopold has recorded a very remarkable case concerning a woman who had had seven children. After the fourth child she had, according to the evidence, an extra-uterine pregnancy, then three more intra-uterine children, and lived to the age of 70 years; at the necropsy a sequestered fœtus, which she had carried 35 years, was found.† This case, and others which could be quoted if necessary, serves to show that a sequestered fœtus is not necessarily an impassable barrier to the child. To Worrall, of Sydney, belongs the credit of not only correctly diagnosing a sequestered fœtus as a com-

* 'Transactions of the Pathological Society,' vol. xxxviii, p. 455.

† 'Archiv für Gynäkologie,' Band xix, 210, 1882.

plication of pregnancy, but he successfully removed the extra-uterine fœtus, which had been dead about two years, by cœliotomy. The intra-uterine child was born the day following the operation, but in spite of every care it died in a few hours. The mother recovered.*

In dealing with the question of concurrent intra- and extra-uterine gestation, the cases require consideration in three categories:—1. Cases in which uterine pregnancy supervenes on a quiescent (sequestered) extra-uterine fœtus and goes to full term. In these circumstances it may end happily and, as in Leopold's case, be successfully repeated. 2. An extra-uterine and a uterine pregnancy begin simultaneously, but the complication is recognised in the early months, and terminated by surgical intervention (Walther, Hermes, Strauss). 3. Uterine and extra-uterine pregnancy running concurrently to term. All the recorded examples of this extremely rare combination have, with one exception, ended in disaster to the mother.

In order to show what a disastrous conjunction a combined intra- and extra-uterine pregnancy is at term, with two "quick" children, I have drawn up a table of some records, easily accessible to English readers, which plainly shows how deadly it is for the mothers; and it also sets forth the fate of the children. To these cases I have added the year of record, and it will be seen with satisfaction how rarely this deadly combination runs to term. There is one bright feature disclosed in the table, and that is the good fortune which fell to Ludwig, for he not only had the satisfaction of saving the life of the mother, but the intra- and extra-uterine children were also successfully rescued—a feat in obstetric surgery of which any man may justly feel proud.

* 'Medical Press and Circular,' 1891, vol i, 296.

Table showing cases of Concurrent Intra- and Extra-Uterine Pregnancy running to Term, with the Fate of the Mother and Children.

Recorder.	Year.	Fate of mother.	Intra-uterine child.	Extra-uterine child.
Cooke	1863	Died	Died	Died
Sale	1871	Died	Lived	Lived
Galabin	1881	Died	Died	Died
Wilson	1880	Died	Died	Lived
Franklin	1893	Died	Lived	Died
Ludwig	1896	Lived	Lived	Lived

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